Jurnal Sisfotek Global
ISSN (Online): 2721 - 3161, ISSN (Print): 2088 – 1762
DOI: http://dx.doi.org/10.38101/sisfotek.v16i2.16034
Vol. 16, No. 1, March 2026, pp. 1-11

Analysis of the Influence of System Quality, Information Quality, and Service Quality on User Satisfaction of Payment Systems Using Virtual Accounts

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ARTICLE HISTORY
Received : September 23, 2025
Revised : November 27, 2025
Accepted : January 6, 2026

KEYWORDS
System Quality
Information Quality
User Satisfaction
TAM
Virtual Account Payment

ABSTRACT

This study aims to analyze the influence of system quality, information quality, and service quality on user satisfaction in virtual account payment systems implemented at Pesantren Darunnajah. The increasing adoption of digital payment solutions in educational institutions underscores the need for reliable systems that ensure convenience, security, and efficiency. Using the Technology Acceptance Model (TAM) as a theoretical framework, data were collected through a survey of 36 respondents, including guardians and staff, and analyzed using multiple linear regression. The findings reveal that system quality, information quality, and service quality all have a significant positive effect on user satisfaction, with service quality emerging as the most influential factor. These results highlight the importance of responsive support and accurate information in enhancing user experience. The study contributes to the literature on digital payment adoption in Islamic educational institutions and provides practical insights for improving service delivery. Future research should explore additional factors such as security, interface design, and user trust to broaden understanding of technology acceptance in similar contexts.

1. Introduction

Islamic boarding schools (pesantren) have long been institutions that prioritize empowerment while being places of knowledge [1]. As educational institutions, pesantren are capable of boosting the economy through various creative activities aimed at their students (santri). Through these non-formal educational institutions, it is hoped that they can contribute to the economic empowerment of the community. Community empowerment refers to helping the weaker groups (the poor and destitute) acquire the ability to make decisions and determine actions they must take to improve their lives, including efforts to increase welfare and eliminate personal and social barriers [2]. Pesantren, being educational institutions closely connected to the community, have great potential to lead the way in economic empowerment [3].

Today, the advancement of technology has not only reached businesses but also the domain of pesantren. Pesantren, with all of their activities, both traditional and modern, can certainly apply technology in their operational activities. With various policies that can be implemented by the pesantren administrators, payment systems through electronic media can be utilized, such as through technological advances applied by banks. In the pesantren context, payments through virtual account media can be used for monthly tuition fees (SPP) to ease the process for the santri, especially the guardians of the students (wali santri). This system helps prevent worries among guardians about the money not being paid directly by the santri, allowing guardians to make payments independently from their place of residence. Furthermore, this convenience avoids cash payments, reduces the chances of miscalculations, and ensures better security.

Pesantren Darunnajah offers payment using electronic fintech, specifically virtual accounts. Using virtual accounts is similar to having a personal bank account, even though it is not a physical one. Through this service, it is expected that guardians will find it easier to make payments, as they can directly pay via a teller or the nearest ATM. This service is made possible by collaborating with banks to facilitate easier payments. The virtual account payment method has been implemented at Pesantren Darunnajah since May 2019 as an option to encourage students to be more disciplined in making payments, as many had been neglectful in this regard. Previously, the method was manual, where students made direct payments to the treasurer at the start of each month using a card system

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and fines were directly calculated by the student at the time of payment, which led to a lot of indiscipline. However, with the implementation of virtual account payments, students have become more disciplined as the fines are higher than before, leading to a decrease in the number of students who are late in paying each month.

Pesantren Darunnajah is one of the pesantren in Jakarta that offers banking services, such as providing Bank Muamalat virtual accounts for each transaction related to monthly tuition fees or other expenses. For the pesantren it self, this method is very helpful in processing monthly payments, as there is no need to make direct collections from the students. Based on this description, the author is interested in conducting research in the form of a research journal related to the "Virtual Account Payment Service at Pesantren Darunnajah Jakarta." The virtual account payment service has become increasingly popular in this digital era because it provides convenience and efficiency for its users. However, the success of this service depends greatly on the quality of the system, information, and services offered.

Table 1. Example Of Virtual Account Numbers For Santri

Student Name	*Student ID*	*Year of Admission*	*Virtual Account Number*
Muhammad Fahri	2.22.00691	2023	8366-1000-2220-0xxx
Syifa Shahira	2.21.00270	2023	8601-1200-2210-0xxx
Annisa Fitri	2.20.17736	2022	8601-1200-2201-7xxx
Labaika Malai	2.20.17759	2022	8366-1200-2201-7xxx
Muhammad Hawzaan El-Khair	1.18.16541	2022	8366-1000-1181-6xxx

2. Research Methodology

2.1. System Quality

System quality is a combination of both software and hardware integrated into a system [4]. According to Kader system quality refers to activities that are interrelated and contribute to producing the expected output [5]. Anetoh define system quality as the data processing system with sufficiently adequate technical capabilities [6]. Based on these definitions, system quality refers to the ability of the system to process information and generate the desired or commanded outcomes. To measure system quality, Delone and McLean use several indicators that are further detailed by Meilani et al which include ease of use, security, response time, ease of access, and reliability [7].

2.2. Information Quality

According to Antoni information quality refers to accurate information displayed on websites, which helps consumers understand a product being sold and can influence decision-making [8]. Information quality is when information is explained in detail to educate consumers. According to information quality is a measure to assess whether the information meets the continuous needs of consumers. Based on these definitions, information quality refers to detailed information that provides value to consumers by helping them understand the product or service they intend to purchase or use. To measure information quality, Delone and McLean use indicators further explained by Meilani et al such as information completeness, information accuracy, relevancy, understandability, and timeliness [8]. Based on these five indicators, previous studies by Rahmawati state that these five indicators are key factors in measuring information quality [1].

2.3. Service Quality

Service quality is the overall evaluation provided by consumers about a service. According to service quality is a multidimensional concept formed through the assessment of several service items, considering not only expectations or outcomes. Define service quality as a consumer's perception of the actual service provided and the service process, rather than comparing it with expected outcomes. Based on these definitions, service quality refers to the overall evaluation by the consumer regarding a service, from the initial experience to the completion of the service. To measure service quality, Delone and McLean use several indicators explained, such as tangibles, reliability, responsiveness, assurance, and empathy [9]. Previous studies by Tinggogoy & Tondo and state that these five indicators are critical to measuring service quality.

2.4. Customer Satisfaction

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Customer satisfaction is the depiction of the feeling of pleasure or dissatisfaction based on the results obtained. According to customer satisfaction is considered an expression of the level of service quality provided. define customer satisfaction as the overall reaction of consumers, from unmet conditions to the experience after the service. Based on these definitions, customer satisfaction refers to the feeling of contentment that consumers experience after consuming a product or receiving a service. To measure consumer loyalty, several indicators are outlined by including precision, usage experience, overall satisfaction, expectations, and service. Based on these five indicators, previous studies state that these indicators are used to measure customer satisfaction.

2.5. The Impact of System Quality on User Satisfaction

A study conducted demonstrated that system quality has an impact on user satisfaction. System quality can be measured in terms of response time, system reliability, ease of use, system flexibility, and system security. Previous studies have proven that user satisfaction is influenced by system quality. Based on the description above, Hypothesis 1 (H1) is: System quality is expected to significantly affect user satisfaction.

2.6. The Impact of Information Quality on User Satisfaction

Information quality refers to the quality of the output of an information system, which can be measured in terms of accuracy, precision, reliability, completeness, relevance, timeliness, and understandability. Based on previous research, it has been proven that user satisfaction is not only influenced by system quality but also by information quality. Based on the description above, Hypothesis 2 (H2) is: Information quality is expected to significantly affect user satisfaction.

2.7. The Impact of Service Quality on User Satisfaction

According to service quality is the quality of the support or assistance received by users from the information systems department and related personnel, which includes the level of responsiveness, accuracy, reliability of support, as well as technical competence and empathy from IT personnel. Lestari et, al found that the measurement of information systems effectiveness generally focuses only on the information system as a product, while the support service for the information system is often overlooked [7]. Therefore, researchers may face the risk of incorrect measurement of information system effectiveness if they do not include the service quality dimension in their research model.

In response to this, added the service quality dimension to their updated information systems success model. The higher the service quality produced by an information system, the more it will enhance user satisfaction. Based on the description above, Hypothesis 3 (H3) is: Service quality is expected to significantly affect user satisfaction.

2.8. Technology Acceptance Model (TAM)

According to Davis, "The Technology Acceptance Model (TAM) is a model used to predict and explain how users accept and use technology related to their work". The TAM model comes from psychological theory to explain the behavior of information technology users based on beliefs, attitudes, intentions, and user behavior relationships. One of the factors that can influence this is the user's perception of the usefulness and ease of use of information technology as an action in the context of information technology use [10]. Therefore, the reason someone sees the benefit and ease of using information technology leads them to accept the use of that technology.

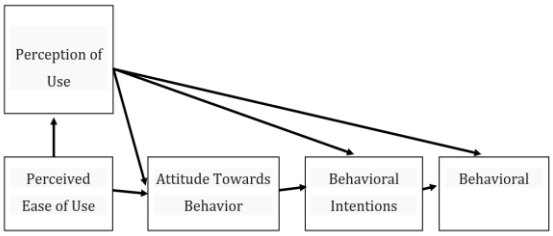

Figure 1. Technology Acceptance Model

Based on the TAM theory, the research developed to evaluate the ALISTA application can be formulated into the following hypotheses:

1. The Influence of User Interface Design on Actual Use Behavior (H1)
2. The design of the application interface serves as a benchmark in application usage, where each user will experience the advantages of the application, making it easier and more comfortable to use.
3. The Influence of Perceived Ease of Use on Actual Use Behavior (H2).

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The mental influence of using the application will impact daily performance, as users may experience physical complaints, such as eye strain from waiting too long for the system to load, and other issues.

4. The Influence of Attitude Toward Using on Actual Use Behavior (H3)

   The user's attitude toward the application serves as a benchmark for their actual usage behavior, determining whether the application has any emotional impact or not. Conceptually, the application should function normally without disturbing the user's condition.

5. The Influence of Behavioral Intention to Use on Actual Use Behavior (H4)

   Daily user behavior serves as a key indicator of actual usage, whether good or bad behavior affects the application, and whether it will benefit or harm the user.

Based on these hypotheses, a TAM test was conducted using a research questionnaire to determine how well users understand the actual conditions obtained from the users as participants in the study. This research uses a quantitative approach with a survey method. A questionnaire was distributed to 36 users of the virtual account payment service. A 5-point Likert scale was used to measure respondents' perceptions of system quality, information quality, service quality, and user satisfaction. Data were analysed using multiple linear regression to determine the impact of each independent variable on user satisfaction. The following scale was used to gather responses from the participants:

1 :Strongly Disagree

2 : Disagree

3 : Neutral

4 : Agree

5 : Strongly Agree

Section 1: System Quality Assessment

a. This payment information system is easy to use.

b. This payment information system processes transactions quickly.

c. The interface of this payment information system is intuitive and easy to understand.

d. This information system rarely experiences disruptions or downtime.

Section 2: Information Quality

a. The information provided by this system is always accurate.

b. The information provided by this system is always up to date.

c. The financial reports generated by this system are clear and easy to understand.

d. This system provides timely notifications about important transactions.

Section 3: Service Quality Assessment

a. The technical support team is always responsive to the issues I face.

b. Customer service requests are handled quickly.

c. Technical support is always available when I need it.

d. The user guides and documentation provided are very helpful.

Section 4: User Satisfaction Assessment

a. I feel comfortable using this payment system for daily transactions.

b. I would recommend this payment system to others.

c. Overall, I am satisfied with my experience using this payment system.

d. This system helps me complete tasks more efficiently.

2.9 Research Framework

Based on the existing issues, the research framework model is as follows:

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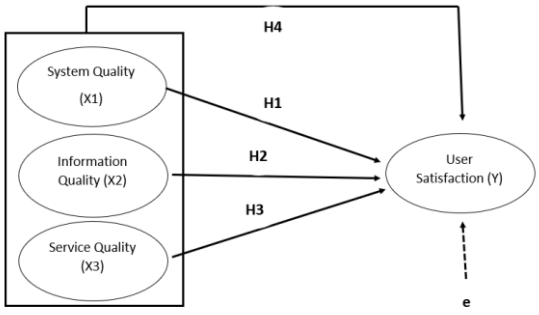

Figure 2. Research Framework

2.10 Virtual Account Payment

A virtual account is a non-physical account created by a customer and issued by a bank. In a virtual account created by the bank, there is an individual ID number for each customer. The creation of such an account is typically done at the request of a company or institution to facilitate the payment process. Each customer will be assigned a unique ID number, also known as a VA number, which is used during each transaction [11]. The use of virtual account payments is similar to the transfer method for making payments to a destination [12]. However, there is a key difference: customers do not need to perform a cross-check or confirm after transferring to the destination account number, nor do they need to send proof of the transaction, such as a receipt [7], [12]. Instead, they simply need to pay the amount indicated on the bill, and the amount will be automatically reduced because the transfer is done through the individual ID number, which is unique to each customer. Furthermore, customers do not need to have an account with the bank issuing the VA; they only need to have the ID number provided by the company or a unique number for each customer.

Table 2. Example of User Data for Payment System Using Virtual Account

Student Name	*Student ID*	*Year of Admission*	*Virtual Account Number*
Muhammad Fahri	2.22.00691	2023	8366-1000-2220-0xxx
Syifa Shahira	2.21.00270	2023	8601-1200-2210-0xxx
Annisa Fitri	2.20.17736	2022	8601-1200-2201-7xxx
Labaika Malai	2.20.17759	2022	8366-1200-2201-7xxx
Muhammad Hawzaan El-Khair	1.18.16541	2022	8366-1000-1181-6xxx

In this payment system, each student is given a unique virtual account number. The transaction process can be carried out through the following steps:

1. Issuance of Virtual Account Number: Each student who registers will be given a unique virtual account number. This number is personal and will be used for all payment transactions related to their education.
2. Payment Process: Parents or guardians of students can make payments through various channels, such as ATM, mobile banking, or internet banking. They only need to enter the provided virtual account number.
3. Payment Confirmation: After the payment is made, the system will automatically update the payment status of the student in the pesantren's database. No manual confirmation from the treasurer or financial staff is required.
4. Bank Statement: The system is also equipped with a bank statement feature that can be accessed by the students and the pesantren. This feature allows all parties to monitor transaction history in real-time, ensuring transparency and accuracy in financial management.

The method of payment using a virtual account is quite simple. If a customer does not have an account at the bank that issued the VA, they can go directly to the bank teller, provide the ID number, and pay the amount stated on the bill. If the customer already has an account with the issuing bank, they can pay via ATM, simply entering the ID number to reduce the bill. Here's how the transaction process works when using a virtual account:

1. The merchant will notify the buyer/customer to transfer a certain amount of money to the provided VA number.
2. The provided VA number will link the transaction to the buyer and their respective invoice.
3. The merchant will receive a notification once the payment has been received. The merchant will then perform an identification process to confirm the payment made by the buyer.

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3. Result and Discussion

The results of the analysis show that system quality, information quality, and service quality all have a significant impact on user satisfaction. Service quality has the largest impact, indicating that good service aspects are crucial for improving user satisfaction in the context of virtual account payments.

3.1 Validity Test

The validity test is a measurement used to assess the accuracy of an indicator. To determine whether a statement on the questionnaire is valid or not, the factor loading value of the validity test can be checked. It is considered valid if the significance or sign < 0.5. In this study, all indicators of the variables are considered valid because they have a Pearson Correlation value > 0.50.

Correlations

		X3.1	X3.2	X3.3	X3.4	TOTAL
X3.1	Pearson Correlation	1	.803**	.772**	.771**	.915**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	34	34	34	34	34
X3.2	Pearson Correlation	.803**	1	.785**	.834**	.933**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	34	34	34	34	34
X3.3	Pearson Correlation	.772**	.785**	1	.753**	.898**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	34	34	34	34	34
X3.4	Pearson Correlation	.771**	.834**	.753**	1	.920**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	34	34	34	34	34
TOTAL	Pearson Correlation	.915**	.933**	.898**	.920**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	34	34	34	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		X2.1	X2.2	X2.3	X2.4	TOTAL
X2.1	Pearson Correlation	1	.765**	.637**	.572**	.871**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	34	34	34	34	34
X2.2	Pearson Correlation	.765**	1	.645**	.827**	.935**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	34	34	34	34	34
X2.3	Pearson Correlation	.637**	.645**	1	.551**	.811**
	Sig. (2-tailed)	.000	.000		.001	.000
	N	34	34	34	34	34
X2.4	Pearson Correlation	.572**	.827**	.551**	1	.845**
	Sig. (2-tailed)	.000	.000	.001		.000
	N	34	34	34	34	34
TOTAL	Pearson Correlation	.871**	.935**	.811**	.845**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	34	34	34	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4. Validity Test X1 (System Quality)

Correlations

		X2.1	X2.2	X2.3	X2.4	TOTAL
X2.1	Pearson Correlation	1	.765**	.637**	.572**	.871**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	34	34	34	34	34
X2.2	Pearson Correlation	.765**	1	.645**	.827**	.935**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	34	34	34	34	34
X2.3	Pearson Correlation	.637**	.645**	1	.551**	.811**
	Sig. (2-tailed)	.000	.000		.001	.000
	N	34	34	34	34	34
X2.4	Pearson Correlation	.572**	.827**	.551**	1	.845**
	Sig. (2-tailed)	.000	.000	.001		.000
	N	34	34	34	34	34
TOTAL	Pearson Correlation	.871**	.935**	.811**	.845**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	34	34	34	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 5. Validity Test X2 (Information Quality)

Correlations

		Y.1	Y.2	Y.3	Y.4	TOTAL
Y.1	Pearson Correlation	1	.736**	.741**	.650**	.898**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	34	34	34	34	34
Y.2	Pearson Correlation	.736**	1	.720**	.626**	.877**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	34	34	34	34	34
Y.3	Pearson Correlation	.741**	.720**	1	.709**	.895**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	34	34	34	34	34
Y.4	Pearson Correlation	.650**	.626**	.709**	1	.845**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	34	34	34	34	34
TOTAL	Pearson Correlation	.898**	.877**	.895**	.845**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	34	34	34	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 6. Validity Test X3 (Service Quality)

Correlations

		X1.1	X1.2	X1.3	X1.4	TOTAL
X1.1	Pearson Correlation	1	.655**	.708**	.671**	.880**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	34	34	34	34	34
X1.2	Pearson Correlation	.655**	1	.524**	.640**	.857**
	Sig. (2-tailed)	.000		.001	.000	.000
	N	34	34	34	34	34
X1.3	Pearson Correlation	.708**	.524**	1	.531**	.785**
	Sig. (2-tailed)	.000	.001		.001	.000
	N	34	34	34	34	34
X1.4	Pearson Correlation	.671**	.640**	.531**	1	.856**
	Sig. (2-tailed)	.000	.000	.001		.000
	N	34	34	34	34	34
TOTAL	Pearson Correlation	.880**	.857**	.785**	.856**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	34	34	34	34	34

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 7. Validity Test Y (User Satisfaction)

3.2 Reliability Test

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The reliability test determines if a variable is reliable, which is indicated by a value > 0.70. The reliability test can use the Cronbach alpha value and composite reliability. A variable is considered reliable if it has a Cronbach alpha value > 0.70.

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	34	100.0
	Excluded[a]	0	.0
	Total	34	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.857	4

Figure 8. X1 (System Quality)

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	34	100.0
	Excluded[a]	0	.0
	Total	34	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.887	4

Figure 9. X2 (Information Quality)

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	34	100.0
	Excluded[a]	0	.0
	Total	34	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.935	4

Figure 10. X3 (Service Quality)

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	34	100.0
	Excluded[a]	0	.0
	Total	34	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.900	4

Figure 11. Y (User Satisfaction)

3.3 R-Square

This test is performed to see what percentage of the independent variables, namely X1 (System Quality), X2 (Information Quality), and X3 (Service Quality), can explain the dependent variable Y (User Satisfaction). In this table, it can be stated that the X variables (System Quality, Information Quality, and Service Quality) can explain the Y variable (User Satisfaction) by 78.2%, and the remaining 21.8% is explained by other variables outside of this study.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886[a]	.786	.772	1.281

a. Predictors: (Constant), X3, X2

Figure 12. R-Square Test

3.4 F-Square

The F test or regression coefficient test is used to determine whether, collectively, the independent variables have a significant effect on the dependent variable. With an F table value and a significance level of 0.05 or 5%, the F test results from simultaneous testing are shown in the figure above. The df value obtained is 3, calculated using the formula from Ghozali (2011): df = N – K, where N is the number of variables being tested in this study (3: information quality, system quality, service quality) and K is the dependent variable (user satisfaction, variable Y). Therefore, df = 3 - 1 = 2. The F calculation value obtained is 56.781, which is larger than the F table value (3, 32) = 1.81, calculated from SPSSindonesia.com, and the significance level is 0.001 < 0.05 (significance level). Thus, it can be concluded that the variables of information quality, system quality, and service quality collectively have a positive and significant effect on usersatisfaction.

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ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	186.224	2	93.112	56.781	.000[b]
	Residual	50.835	31	1.640		
	Total	237.059	33			

a. Dependent Variable: Y1
b. Predictors: (Constant), X3, X2

Figure 13. F Test Results

3.5 T-Test

The t-test or partial regression coefficient test is used to determine whether the independent variables significantly affect the dependent variable on a partial basis. The T-table values are as follows: x1 = 1.743, x2 = 1.700, x3 = 2.366 for a sample of 36 and a significance level of 0.05 or 5%. The results show that system quality, information quality, and service quality have a positive and significant effect on user satisfaction. Below are the T-test results.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.927	1.328		2.205	.035
	X1	.272	.156	.290	1.743	.091
	X2	.267	.157	.277	1.700	.100
	X3	.319	.135	.384	2.366	.025

a. Dependent Variable: Y1

Figure 14. T Test Results

3.6 Hypothesis Test

Hypotheses can be accepted or rejected based on their significance level of 5% or 0.05. In this study, three hypotheses were accepted because they have a P-value less than 0.05, and one hypothesis was rejected because its P-value was greater than 0.05. The following are the results of the hypothesis testing and the Hypothesis Table.

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
Y1	16.71	2.680	34
X1	16.32	2.782	34
X2	16.32	2.782	34
X3	15.71	3.224	34

Correlations

		Y1	X1	X2	X3
Pearson Correlation	Y1	1.000	.838	.838	.856
	X1	.838	1.000	1.000	.828
	X2	.838	1.000	1.000	.828
	X3	.856	.828	.828	1.000
Sig. (1-tailed)	Y1	.	.000	.000	.000
	X1	.000	.	.000	.000
	X2	.000	.000	.	.000
	X3	.000	.000	.000	.
N	Y1	34	34	34	34
	X1	34	34	34	34
	X2	34	34	34	34
	X3	34	34	34	34

Figure 15. Hypothesis Results

Table 3. Potentials Of Hypotesis

No	*H*	*Hypothesis*	*Description*	*Status*
1	H1	System quality has a positive and significant effect on user satisfaction.	System Quality: Reliability, ease of use, and system speed play an important role in forming positive user perceptions.	Accepted
2	H2	Information quality has a positive and significant effect on user satisfaction.	Information Quality: Accuracy, relevance, and timeliness of information provided by the system significantly influence user satisfaction.	Accepted
3	H3	Service quality has a positive and significant effect on user satisfaction.	Service Quality: Responsiveness, empathy, and the competence of service staff support a positive user experience.	Accepted

3.7 Discussion

The analysis results indicate that system quality, information quality, and service quality all have a significant impact on user satisfaction. Among these, service quality has the most substantial impact, suggesting that good service aspects are crucial in enhancing user satisfaction in the context of virtual account payments. This finding supports previous research, which highlights that service quality plays a key role in shaping user satisfaction, particularly in online platforms and digital payment systems [13]. Service quality is commonly defined as the ability of a service provider to meet customer expectations, with dimensions such as reliability, responsiveness,

Jurnal Sisfotek Global
ISSN (Online): 2721 - 3161, ISSN (Print): 2088 – 1762
DOI: http://dx.doi.org/10.38101/sisfotek.v16i2.16034
Vol. 16, No. 1, March 2026, pp. 1-11

assurance, and empathy being central to ensuring customer satisfaction [14]. In virtual account payments, where users rely heavily on the service for seamless transactions, providing high-quality service can directly improve user satisfaction.

Furthermore, system quality, which encompasses the reliability, usability, and functionality of the platform, is also a significant contributor to user satisfaction. This aligns with DeLone and McLean's model, which posits that system quality significantly impacts user satisfaction in information systems [15]. A reliable and user-friendly system is crucial in digital platforms since users rely on these systems to perform transactions smoothly. If users encounter technical issues or difficulties navigating the system, their overall satisfaction will decrease, as indicated by prior studies [16].

Similarly, information quality, which refers to the accuracy, relevance, and timeliness of the information provided, also significantly influences user satisfaction. The results corroborate the work of Wang and Liao, who demonstrated that information quality directly affects perceived service value [17]. In virtual account payment systems, providing accurate and relevant information is vital for users to make informed decisions. Without reliable information, users may experience uncertainty or dissatisfaction with the service.

The validity and reliability tests conducted in this study provide additional support for the robustness of the findings. The validity test, which assesses the accuracy of the indicators used in the study, confirms that all variables system quality, information quality, service quality, and user satisfaction are valid indicators, as reflected by Pearson Correlation values greater than 0.50. This finding aligns with prior research where higher factor loadings (greater than 0.5) indicate that the measurement items effectively represent the constructs being studied [18].

The reliability test, which examines the consistency of the variables, reveals that all variables exhibit Cronbach's alpha values greater than 0.70, indicating that the measurement scales are reliable. This is consistent with the widely accepted threshold proposed by Nunnally, which states that a Cronbach's alpha value greater than 0.70 ensures the internal consistency of the constructs [19]. Reliable measurements are crucial for ensuring that the study's results are replicable and not simply the result of random error or unreliable data.

The R-Square test indicates that the independent variables (system quality, information quality, and service quality) account for 78.2% of the variance in user satisfaction, signifying that these variables are strong predictors of user satisfaction in virtual account payment systems. This finding supports the research by Pavlou, who demonstrated that system quality and service quality are among the most influential factors in determining consumer satisfaction in online services [20]. The remaining 21.8% of the variance can be attributed to other external factors not captured in this study, such as individual user characteristics or external environmental influences.

The F-Square test results also support the significance of the independent variables. The F-test value of 56.781 exceeds the critical F-table value, and the significance level is below 0.05, indicating that the collective effect of system quality, information quality, and service quality on user satisfaction is statistically significant. These results align with previous studies that employed the F-test to demonstrate the collective impact of multiple independent variables on a dependent variable [18].

The T-test results reveal that all three independent variables system quality, information quality, and service quality have a significant and positive effect on user satisfaction. These findings corroborate the work of Liu and Arnett [21], who found that system quality, service quality, and information quality significantly affect user satisfaction in e-commerce contexts. Specifically, system quality and service quality influence user trust and satisfaction in online services, while information quality shapes users' perceptions of value and reliability.

The hypothesis test results show that all three hypotheses were accepted, indicating that system quality, information quality, and service quality all have a positive and significant effect on user satisfaction. These findings are consistent with the research by McKinney et al. [22] and Anderson et al. [23], which consistently emphasize the importance of these three factors in shaping user satisfaction, particularly in online environments where user experience is critical. High service quality and system quality, combined with accurate and relevant information, play key roles in ensuring a positive user experience.

In conclusion, the results of this study make a valuable contribution to the understanding of user satisfaction in online services, particularly in the context of virtual account payment systems. The study confirms that system quality, information quality, and

Jurnal Sisfotek Global
ISSN (Online): 2721 - 3161, ISSN (Print): 2088 – 1762
DOI: http://dx.doi.org/10.38101/sisfotek.v16i2.16034
Vol. 16, No. 1, March 2026, pp. 1-11

service quality all have a significant impact on user satisfaction. These findings suggest that organizations should focus on enhancing these aspects to improve user experience. Future research could explore additional factors that may influence user satisfaction, such as security measures or user interface design, and extend the study to different contexts or industries to verify the generalizability of these findings.

4. Conclusion

This study confirms that system quality, information quality, and service quality significantly influence user satisfaction in virtual account payment systems, with service quality being the most dominant factor. These findings not only emphasize the importance of prioritizing responsive support and accurate information to improve user experience but also provide practical guidance for educational institutions and fintech providers in designing more user-centric payment systems. Despite these contributions, the research is limited by its small sample size and focus on a single pesantren, which may restrict generalizability. Future studies should include larger and more diverse samples, examine additional factors such as security, interface design, and user trust, and consider emerging technologies like mobile wallets and QR-based payments to enrich understanding of technology adoption in educational contexts.

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